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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,336	04/28/2006	Andreas Luger	LUGER ET AL-1 PCT	5149
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COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576			EXAMINER BEHM, HARRY RAYMOND	
			ART UNIT	PAPER NUMBER
			2838	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/577,336	<b>Applicant(s)</b> LUGER ET AL.	
	<b>Examiner</b> HARRY BEHM	<b>Art Unit</b> 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments with respect to the amended claims have been considered but are moot in view of the new ground(s) of rejection below.

### ***Claim Language***

In Claim 16, lines 10-12 it is unclear whether adapting a dead time is claimed or not due to the claim language 'and/or' on line 11 and the claim language 'or frequency' on line 11. Furthermore, it is unclear what 'respectively' on line 12 modifies. Examiner requests clarification. Additionally, Examiner proposes deleting "and/or a pulse duration, or frequency, respectively" on lines 11-12.

In claim 16, line 16, Examiner requests changing "parasitic capacities" to 'parasitic capacitances'.

In claim 18, line 25, Examiner requests changing "parasitic capacities" to 'parasitic capacitances'.

In claim 18, line 16, it is unclear what "respectively" modifies and Examiner requests deleting the claim language 'respectively'.

In claim 18, line 19, Examiner requests changing "permanently" to 'continuously'.

### ***Claim Objections***

Claim 11 is objected to because of the following informalities: "the period duration" lacks antecedent basis. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata (US 5,625,539) in view of Melanson (US 6,294,954).

With respect to Claim 16, Nakata discloses a solar inverter (Fig. 1 200) for feeding current produced by a d.c. voltage source (Fig. 1 2) into an a.c. voltage grid (Fig. 1 3), said d.c. voltage source being formed by a solar module (Fig. 1 2), said inverter comprising a bridge inverter (Fig. 1 4), a transformer (Fig. 1 5), a rectifier (Fig. 1 6), a buck chopper (Fig. 1 8,16) including a full bridge (Fig. 1 8) and an output filter (Fig. 1 16), a control device (Fig. 1 9,10,11) being provided for controlling the parameters of the inverter, wherein a device (Fig. 1 13) for detecting the current (Fig. 1 14) produced by the d.c. voltage source (Fig. 1 2) is provided, which device is connected to the control device (Fig. 1 9-11). Nakata remains silent as to implementing the dead time of the bridge inverter.

Melanson teaches adapting the dead time (Fig. 5b Optimum Timing) for a half bridge (Fig. 5a 305) based upon the sensed current (Fig. 5b Current) and teaches sensing the input current (Fig. 6 601) to adapt the dead time. It would have been obvious to one of ordinary skill in the art at the time of the invention wherein the bridge inverter is designed for adapting a dead time for the switching elements and/or a pulse

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duration, or frequency, respectively, for the pulse width modulation as a function of the current detected, the dead time representing a time of the switching elements for switching over from one switching element to a further switching element connected in series of the bridge inverter, thereby ensuring that parasitic capacities stored in the switching elements of the bridge inverter can be completely recharged and no excessively long switching pauses can occur at the same time. The reason for doing so was ("for setting the dead time to the optimum level", Melanson column 1, lines 52-53).

With respect to Claim 17, Nakata in view of Melanson disclose the inverter according to claim 16, wherein the device (Fig. 1 13) for detecting the current produced by the d.c. voltage source is formed by a current measurement unit on the primary side of the transformer (Fig. 1 5).

With respect to Claim 18, Nakata in view of Melanson disclose a method for a solar inverter (Fig. 1 200) for feeding current (Fig. 1 1in) produced by a d.c. voltage source formed by a solar module (Fig. 1 2) into an a.c. voltage grid (Fig. 1 3) comprising the steps of

(a) chopping (Fig. 1 Q1-Q4) the current produced by the d.c. voltage source in a form of a pulse width modulation by a bridge inverter (Fig. 1 4) by alternate switching of switching elements (Fig. 1 Q1-Q4) connected in parallel and connected in series;

(b) transmitting the current chopped via a transformer (Fig. 1 5) connected between the switching elements that are connected in series; and

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(c) rectifying (Fig. 1 6) the current transmitted and feeding the current into the a.c. voltage grid (Fig. 1 3) via a buck chopper (Fig. 1 8,16); wherein, for a power adaptation, the switching times of the switching elements of the bridge inverter are controlled (Fig. 1 9-11), or regulated (Fig. 1 Vout), respectively; wherein the current (Fig. 1 Iin) produced by the d.c. voltage source is detected (Fig. 1 13) at intervals which are cyclical or is detected permanently. Nakata remains silent as to the dead time of the switching elements.

Melanson teaches adapting the dead time (Fig. 5b Optimum Timing) for a half bridge (Fig. 5a 305) based upon the sensed current (Fig. 5b Current) and teaches sensing the input current (Fig. 6 601) to adapt the dead time. It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a dead time of the switching elements of the bridge inverter is set as a function of the detected current of the d.c. voltage source, the dead time representing a time of the switching elements for switching over from one switching element to a further switching element connected in series of the bridge inverter, thereby ensuring that parasitic capacities stored in the switching elements of the bridge inverter can be completely recharged and no excessively long switching pauses can occur at the same time. The reason for doing so was ("for setting the dead time to the optimum level", Melanson column 1, lines 52-53).

With respect to Claim 11, Nakata in view of Melanson disclose the method according to claim 18, wherein a period duration (Fig. 4 Q1-Q4), or frequency,

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respectively, for the pulse width modulation for switching over the switching elements of the bridge inverter (Fig. 1 4) is set as a function of the current detected (Fig. 4 In).

With respect to Claim 12, Nakata in view of Melanson disclose the method according to claim 18, wherein the switching times (Fig. 4 Q1-Q4) of the switching elements (Fig. 1 Q1-Q4) of the bridge inverter (Fig. 1 4) are evaluated as a function of the current detected (Fig. 4 In) and set automatically.

With respect to Claim 13, Nakata in view of Melanson disclose the method according to claim 18, wherein the switching times (Fig. 4 Q1-Q4) of the switching elements (Fig. 1 Q1-Q4) of the bridge inverter are calculated in dependence on the current detected (Fig. 1 In).

With respect to Claim 14, Nakata in view of Melanson disclose the method according to claim 18, wherein the switching times (Fig. 4 Q1-Q4) of the switching elements of the bridge inverter (Fig. 1 4) are set as a function of the mean value since the times are set based on the current (Fig. 4 It) flowing over the primary winding of the transformer (Fig. 1 5).

With respect to Claim 15, Nakata in view of Melanson disclose the method according to claim 18, wherein the switching elements (Fig. 1 Q1-Q4) are activated at appropriately set points of time.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **HARRY BEHM** whose telephone number is (571)272-8929. The examiner can normally be reached on 7:00 am - 4:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Monica Lewis can be reached on (571) 272-1838. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry Behm/  
Examiner, Art Unit 2838